CLAIMS

1. A method for cooling a power transformer comprising:

(A) drawing air into a vaporizer having an intake and an exhaust, and passing air through the vaporizer from the intake to the exhaust;

(B) passing liquid cryogen from a storage vessel to the vaporizer, spraying liquid cryogen into the vaporizer, and cooling air within the vaporizer by direct heat exchange with the liquid cryogen; and

(C) passing cooled air from the vaporizer to a power transformer to provide cooling to the power transformer.

2. The method of claim 1 wherein the liquid cryogen comprises liquid nitrogen.

3. The method of claim 1 wherein a telemetry unit receives a temperature measurement from the power transformer and controls the action of a cryogenic valve which regulates the flow of liquid cryogen from the storage vessel to the vaporizer.

4. A method for cooling a power transformer comprising;

(A) passing air into a cooling device;

(B) cooling the air within the cooling device; and

(C) passing the cooled air from the cooling device to a power transformer to provide cooling to the power transformer.

5. The method of claim 4 wherein the air is cooled within the cooling device by contact with cryogen.

6. The method of claim 5 wherein cryogen is passed with the cooled air from the cooling device to the power transformer.

7. The method of claim 5 wherein the cryogen is liquid.

8. The method of claim 5 wherein a telemetry unit receives a temperature measurement from the power transformer and controls the action of a cryogenic valve which regulates the flow of cryogen from a storage vessel to the cooling device.

9. Apparatus for cooling a power transformer comprising:

(A) a vaporizer having an intake and an exhaust, and having means for drawing cooling fluid into the intake of the vaporizer and for ejecting cooling fluid out from the exhaust of the vaporizer;

(B) a liquid cryogen storage vessel and means for passing liquid cryogen from the storage vessel to the vaporizer; and

(C) a power transformer positioned to be contacted by cooling fluid ejected out from the exhaust of the vaporizer.

10. The apparatus of claim 9 wherein the vaporizer has a converging/diverging configuration from the intake to the exhaust.

11. The apparatus of claim 9 wherein the means for drawing cooling fluid into the intake of the vaporizer and for ejecting cooling fluid out from the exhaust of the vaporizer comprises in electric motor and fan.

12. The apparatus of claim 11 wherein the means for passing liquid cryogen from the storage vessel to the vaporizer comprises a plurality of spray nozzles for spraying liquid cryogen into the vaporizer downstream of the fan.

13. The apparatus of claim 9 wherein the means for passing liquid cryogen from the storage vessel to the vaporizer comprises a distributor volume around the vaporizer and a plurality of spray nozzles communicating with the distributor volume and positioned to pass liquid cryogen from the distributor volume into the vaporizer.

14. The apparatus of claim 9 wherein the means for passing liquid cryogen from the storage vessel to the vaporizer includes a cryogenic valve, and further comprising a telemetry unit, means for passing a temperature measurement from the power transformer to the telemetry unit, and means for passing a signal from the telemetry unit to the cryogenic valve for controlling the operation of the cryogenic valve.

15. Apparatus for cooling a power transformer comprising:

(A) a cryogen storage vessel;

(B) a power transformer having a radiator; and

(C) means for passing cryogen from the cryogen storage vessel to the power transformer, said means comprising conduit means having a cryogenic valve and having at least one spray nozzle for spraying cryogen onto the power transformer radiator.

16. The apparatus of claim 15 further comprising a telemetry unit, means for passing a temperature measurement from the power transformer to the telemetry unit, and means for passing a signal from the telemetry unit to the cryogenic valve for controlling the operation of the cryogenic valve.

17. The apparatus of claim 15 wherein the means for passing cryogen from the cryogen storage vessel to the power transformer comprises a plurality of spray nozzles.